

*DECREASING SIGNS OF NEGATIVE AFFECT
AND CORRELATED SELF-INJURY IN
AN INDIVIDUAL WITH MENTAL RETARDATION
AND MOOD DISTURBANCES*

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We evaluated the effects of an enriched environment, based on a paired-choice preference assessment, on both rates of self-injurious behavior (SIB) and percentage of session intervals during which signs of negative affect were displayed by a woman with mental retardation and a mood disorder. Results suggested that SIB and signs of negative affect were highly correlated and that the enriched environment effectively reduced both.

DESCRIPTORS: environmental enrichment, self-injurious behavior, mood disorder, developmental disabilities

Self-injurious behavior (SIB) and mood disorders sometimes coincide in individuals with mental retardation. Behavioral intervention is generally the treatment of choice for SIB (e.g., Iwata et al., 1994), whereas pharmacological agents are more often used to treat mood disorders in this population. In addition, pharmacological agents commonly prescribed for mood disorders sometimes also reduce SIB when the two problems co-occur (e.g., Sovner, Fox, Lowry, & Lowry, 1993). However, little is known about the effects of behavioral treatments on co-occurring SIB and mood disturbance. Although a number of criteria are evaluated in diagnosing mood disturbances, several overt behaviors are typically considered to be correlates of negative affect (e.g., frowning, crying, whining) and positive affect (e.g., smiling, giggling). Given that it is difficult if not impossible to obtain accurate verbal reports about private events related to affect from

an individual with severe mental retardation, it is important to evaluate observable behaviors correlated with the private events commonly referred to as “happiness” or “unhappiness.”

Green and Reid (1996) demonstrated that behaviors indicative of happiness and unhappiness can be objectively defined and reliably measured among persons with mental retardation. They also increased these indices of happiness using a behavioral intervention called the “fun time” program; however, the indices of unhappiness were low and unchanged across conditions, so little is known about the effects of this program on negative affect.

During the fun time program, preferred stimuli, identified via a preference assessment, are presented and rotated on an intermittent, time-based schedule (stimuli are changed about once every 1 to 3 min). In addition, the current stimulus is removed and replaced by another stimulus contingent on negative affect or the absence of positive affect for 1 min. Other than this contingency, the program is similar to the enriched environment procedure described by Vollmer, Marcus, and LeBlanc (1994), in which preferred stimuli, identified by a preference

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assessment, are presented noncontingently as treatment for SIB. Because an enriched environment seems less labor intensive than the fun time program (staff are not required to monitor the individual's affect in order to implement contingencies), an enriched environment might be more appropriate than the fun time program for use with individuals who are not dependent on caregivers for environmental stimulation. In the current investigation, we evaluated the effects of an enriched environment with stimuli identified through a preference assessment on SIB and on signs of positive and negative affect in a woman with mental retardation and major depression.

METHOD

Candy, a 23-year-old woman with severe mental retardation, major depression, mild left hemiparesis, and autistic-like behavior, was admitted to an inpatient unit specializing in the assessment and treatment of severe behavior disorders. Candy displayed high levels of SIB, defined as hitting her head with her hands, hitting her head against hard surfaces, and biting her arms. Other dependent variables were signs of negative affect (frowning, crying, whining, and verbal statements such as "I'm sad") and positive affect (including smiling, giggling, and laughing).

A functional analysis of Candy's SIB (data not shown) suggested that SIB was sensitive to escape from instructional demands but persisted, to a lesser extent, across all conditions. A treatment consisting of differential reinforcement of compliance and a quiet-hands procedure (repeatedly guiding her to place her hands in her lap for 30 s) contingent on SIB was shown to be effective in reducing Candy's SIB to low levels during vocational training sessions. In addition, Candy received carbamazepine (5.3 mg/kg/day) as treatment for her mood disorder and, when combined with the behavioral treat-

ment, SIB and signs of negative affect were maintained at fairly low levels throughout most of the day. We observed, however, that Candy often displayed signs of negative affect when she was left alone. Therefore, the effects of an enriched environment on Candy's negative affect and SIB were evaluated in this condition.

All sessions lasted 10 min and were conducted in a padded room (3 m by 3 m) with a one-way mirror, behind which trained observers used laptop computers to record frequency of SIB and percentage of 10-s intervals of signs of negative and positive affect. Reliability was assessed during 53.6% of sessions. The mean exact agreement coefficient for SIB was 99.7%. Occurrence agreement coefficients for signs of negative and positive affect were 95.1% and 83.2%, respectively.

Twelve items were selected for inclusion during enriched environment sessions based on the results of a paired-choice assessment and included a tape player, a box, a Slinky®, stacking clowns, a tool catalog, Legos®, plastic tools, a stuffed octopus, a top, a ball, a ruler, and a pom-pom. Baseline conditions consisted of placing Candy in an empty session room and informing her that the therapist had work to do outside, but that if she engaged in SIB, the therapist would return and deliver a quiet-hands procedure. When Candy engaged in SIB, the therapist would immediately reenter the room, administer the quiet-hands procedure, and then leave the room. The session clock stopped when the quiet-hands procedure was implemented. Enriched environment sessions were identical to baseline sessions, with the exception that all preferred items were simultaneously available in the room.

RESULTS AND DISCUSSION

The top panel of Figure 1 shows the effects of the enriched environment on Candy's levels of negative and positive affect in

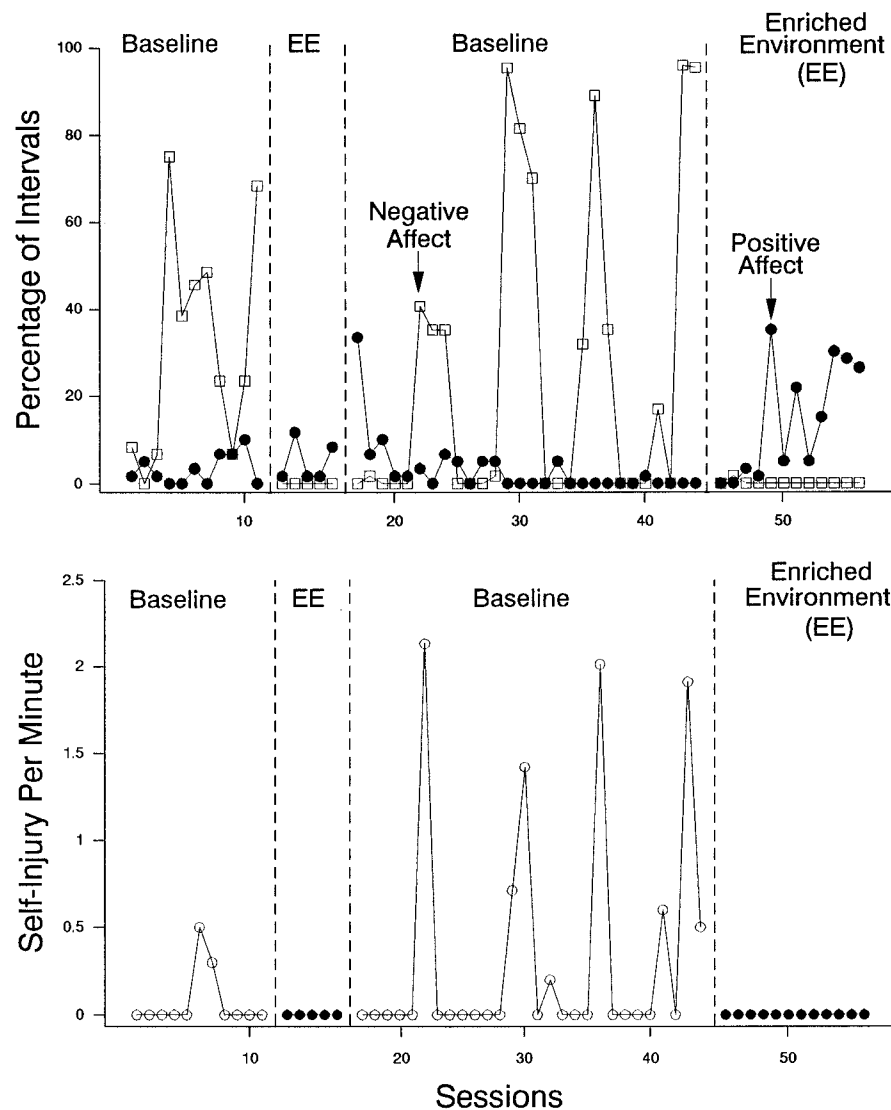


Figure 1. The percentage of intervals of positive and negative affect (top panel) and rates of self-injury (bottom panel) during baseline and enriched environment conditions.

percentages of 10-s intervals. Candy displayed relatively high levels of negative affect ($M = 27.4\%$) and low levels of positive affect ($M = 2.3\%$) during baseline. During enriched environment, negative affect decreased markedly ($M = 0.1\%$) and positive affect increased somewhat, especially during the second enriched environment phase ($M = 11.5\%$ across phases). The bottom panel displays rates of SIB across conditions. Rates during baseline varied widely but averaged

0.3 responses per minute. By contrast, no SIB occurred during enriched environment.

Results of this study are noteworthy in several respects. First, they suggest that SIB and negative affect may be highly correlated in some individuals with mental retardation. Candy engaged in SIB during 36.0% of the sessions in which she displayed negative affect, but did so in only one session (3.2%) during which no negative affect was observed. In addition, she displayed negative

affect in 90.0% of the sessions in which she had SIB, but did so in only 34.7% of the sessions during which no SIB was observed. Certainly, the observable signs of affect measured here are not the only ones correlated with mood disturbances (others include measures of sleep, food intake, participation in activities), nor are the measures employed with Candy universally associated with positive or negative affect (e.g., certain individuals may giggle when anxious). Obviously, such determinations will have to be made on an individual basis. The current study also suggests that, like some pharmacological approaches, behavioral treatments may reduce both SIB and observable signs of negative affect when the two problems co-occur. Finally, our results suggest that the simple addition of preferred stimuli may be sufficient, in some cases, to alter overt indices of happiness and unhappiness for individuals who can interact independently with their environments. In contrast to the fun time program described by Green and Reid (1996), we were able to decrease signs of negative affect without extensive interaction on the part of caregivers. As such, an enriched environment may prove to have positive effects

on indices of affect when caregivers are not available. However, questions remain regarding the durability of these effects, as may be the case for other treatments that involve noncontingent presentation of preferred stimuli (Vollmer *et al.*, 1994).

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